

IN THE CLAIMS:

- 1 1. (Original) A method for restoring adjacencies between a router and its neighbors dur-
2 ing reload of routing software on the router, the method comprising the steps of:
3 placing an interface of the router in a predetermined state that enables the router
4 to receive incoming Hello packets from its neighbors over a computer network;
5 creating a unicast Hello packet in response to receiving an incoming Hello packet
6 from each neighbor; and
7 sending the unicast Hello packet to each neighbor from whom it has received an
8 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
9 the router.
- 1 2. (Original) The method of Claim 1 further comprising the steps of:
2 determining if a neighbor data structure exists for each neighbor sending an in-
3 coming Hello packet; and
4 if not, creating a neighbor data structure for each neighbor sending the incoming
5 Hello packet.
- 1 3. (Original) The method of Claim 2 wherein the predetermined state is a Waiting state
2 with an asserted Preempt flag.
- 1 4. (Original) The method of Claim 3 further comprising the step of providing the Pre-
2 empt flag within the neighbor data structure.
- 1 5. (Original) The method of Claim 1 wherein the routing software is Open Shortest Path
2 First (OSPF) routing protocol software.

- 1 6. (Original) The method of Claim 1 further comprising the steps of:
2 in response to the step of placing, sending empty link state Update packets from
3 the router over the interface;
4 receiving the empty link state Update packets at the neighbors; and
5 in response to the step of receiving, resetting an inactivity timer for the router at
6 each neighbor to thereby prevent the neighbor from resetting its adjacency with the router
7 before the router sends the unicast Hello packet.
- 1 7. (Currently Amended) An apparatus ~~Apparatus~~ for restoring an adjacency between a
2 router and its neighbor during reload of routing software on the router, the apparatus
3 comprising:
4 an interface adapted for placement into a predetermined state that enables the
5 router to receive an incoming Hello packet from the neighbor over a computer network;
6 a processor coupled to the interface; and
7 a unicast Hello packet created by the processor in response to receiving an incom-
8 ing Hello packet from the neighbor, the unicast Hello packet sent to the neighbor to
9 thereby prevent the neighbor from dropping the adjacency with the router.
- 1 8. (Original) The apparatus of Claim 7 further comprising, wherein the predetermined
2 state is a Waiting state with an asserted Preempt flag:
3 a memory coupled to the processor; and
4 a neighbor data structure stored in the memory, the neighbor data structure con-
5 taining information pertinent to the adjacency formed between the router and neighbor,
6 the neighbor data structure further configured to store the Preempt flag.
- 1 9. (Original) The apparatus of Claim 8 further comprising:

2 an empty link state Update packet created by the processor and multicasted over
3 the network in response placement of the interface into the Waiting state with an asserted
4 Preempt flag; and

5 an inactivity timer for the router stored at the neighbor, the inactivity timer reset
6 in response to receiving the empty link state packet at the neighbor to thereby prevent the
7 neighbor from resetting its adjacency with the router before the router sends the unicast
8 Hello packet.

1 10. (Original) Apparatus for restoring an adjacency between a router and its neighbor
2 during reload of routing software on the router, the apparatus comprising:

3 means for placing an interface of the router in a predetermined state that enables
4 the router to receive incoming Hello packets from its neighbors over a computer network;

5 means for creating a unicast Hello packet in response to receiving an incoming
6 Hello packet from each neighbor; and

7 means for sending the unicast Hello packet to each neighbor from whom it has re-
8 ceived an incoming Hello packet to thereby prevent the neighbor from dropping its adja-
9 cency with the router.

1 11. (Original) The apparatus of Claim 10 further comprising:

2 means for determining if a neighbor data structure exists for each neighbor send-
3 ing an incoming Hello packet; and

4 means for creating a neighbor data structure for each neighbor sending the incom-
5 ing Hello packet, if the neighbor data structure does not exist.

1 12. (Original) The apparatus of Claim 11 wherein the predetermined state is a Waiting
2 state with an asserted Preempt flag.

1 13. (Original) The apparatus of Claim 12 further comprising means for providing the
2 Preempt flag within the neighbor data structure.

1 14. (Original) The apparatus of Claim 13 wherein the routing software is Open Shortest
2 Path First (OSPF) routing protocol software.

1 15. (Original) The apparatus of Claim 14 further comprising:
2 means for sending empty link state Update packets from the router over the inter-
3 face; and
4 means for resetting an inactivity timer for the router at the neighbor in response to
5 receiving the empty link state Update packets, the reset inactivity timer preventing the
6 neighbor from resetting its adjacency with the router before the router sends the unicast
7 Hello packet.

1 16. (Original) A computer readable medium containing executable program instructions
2 for restoring adjacencies between a router and its neighbors during reload of routing
3 software on the router, the executable program instructions comprising program instruc-
4 tions for:
5 placing an interface of the router in a predetermined state that enables the router
6 to receive incoming Hello packets from its neighbors over a computer network;
7 creating a unicast Hello packet in response to receiving an incoming Hello packet
8 from each neighbor; and
9 sending the unicast Hello packet to each neighbor from whom it has received an
10 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
11 the router.

1 17. (Original) The computer readable medium of Claim 16 further comprising program
2 instructions for :

3 determining if a neighbor data structure exists for each neighbor sending an in-
4 coming Hello packet; and
5 if not, creating a neighbor data structure for each neighbor sending the incoming
6 Hello packet.

1 18. (Original) The computer readable medium of Claim 17 wherein the predetermined
2 state is a Waiting state with an asserted Preempt flag.

1 19. (Original) The computer readable medium of Claim 18 further comprising program
2 instructions for providing the Preempt flag within the neighbor data structure.

1 20. (Original) The computer readable medium of Claim 19 further comprising program
2 instructions for:

3 in response to the step of placing, sending empty link state Update packets from
4 the router over the interface;
5 receiving the empty link state Update packets at the neighbors; and
6 in response to the step of receiving, resetting an inactivity timer for the router at
7 each neighbor to thereby prevent the neighbor from resetting its adjacency with the router
8 before the router sends the unicast Hello packet.

1 21. (Previously Presented) A method for restoring adjacencies between a router and its
2 neighbors during reload of routing software on the router, the method comprising the
3 steps of:

4 determining if a neighbor data structure exists for each neighbor from which an
5 incoming Hello packet was received;
6 if not, creating a neighbor data structure for each neighbor from which an incom-
7 ing Hello packet was received;

8 placing an interface of the router in a predetermined state that enables the router
9 to receive incoming Hello packets from its neighbors over a computer network;
10 creating a unicast Hello packet in response to receiving an incoming Hello packet
11 from each neighbor and in response to the created neighbor data structure and the prede-
12 termined state; and
13 sending the unicast Hello packet to each neighbor from whom it has received an
14 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
15 the router.

1 22. (Previously Presented) The method of Claim 21 further compromising:
2 indicating that the predetermined state is a Waiting state with an asserted Pre-
3 empt flag.

1 23. (Previously Presented) The method of Claim 22 further comprising:
2 providing the Preempt flag within the neighbor data structure.

1 24. (Previously Presented) A method for restoring adjacencies between a router and its
2 neighbors during reload of routing software on the router, the method comprising the
3 steps of:
4 placing an interface of the router in a predetermined state that enables the router
5 to receive incoming Hello packets from its neighbors over a computer network;
6 creating a unicast Hello packet in response to receiving an incoming Hello packet
7 from each neighbor;
8 sending the unicast Hello packet to each neighbor from whom it has received an
9 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
10 the router;
11 in response to the step of placing, sending an empty link state Update packet from
12 the router over the interface to a selected neighbor;
13 receiving the empty link state Update packet at the selected neighbor; and

1 in response to the step of receiving, resetting an inactivity timer for the router at
2 the selected neighbor to thereby prevent the selected neighbor from resetting its adja-
3 cency with the router before the router sends the unicast Hello packet.

1 25. (Previously Presented) Apparatus for restoring an adjacency between a router and its
2 neighbor during reload of routing software on the router, the apparatus comprising:
3 means for determining if a neighbor data structure exists for each neighbor from
4 which an incoming Hello packet was received;
5 means for creating a neighbor data structure for each neighbor from which an in-
6 coming Hello packet was received, if the neighbor data structure does not exist;
7 means for placing an interface of the router in a predetermined state that enables
8 the router to receive incoming Hello packets from its neighbors over a computer network;
9 means for creating a unicast Hello packet in response to receiving an incoming
10 Hello packet from each neighbor and in response to the created neighbor data structure
11 and the predetermined state; and
12 means for sending the unicast Hello packet to each neighbor from whom it has re-
13 ceived an incoming Hello packet to thereby prevent the neighbor from dropping its adja-
14 cency with the router.

1 26. (Previously Presented) The apparatus of Claim 25 further comprising:
2 means for indicating that the predetermined state is a Waiting state with an as-
3 serted Preempt flag.

1 27. (Previously Presented) The apparatus of Claim 26 further comprising:
2 means for providing the Preempt flag within the neighbor data structure.

1 28. (Previously Presented) Apparatus for restoring an adjacency between a router and its
2 neighbor during reload of routing software on the router, the apparatus comprising:
3 means for placing an interface of the router in a predetermined state that enables
4 the router to receive incoming Hello packets from its neighbors over a computer network;
5 means for creating a unicast Hello packet in response to receiving an incoming
6 Hello packet from each neighbor; and
7 means for sending the unicast Hello packet to each neighbor from whom it has re-
8 ceived an incoming Hello packet to thereby prevent the neighbor from dropping its adja-
9 cency with the router;
10 means for sending an empty link state Update packet from the router over the in-
11 terface to a selected neighbor; and
12 means for the selected neighbor to reset an inactivity timer for the router in re-
13 sponse to receiving the empty link state Update packet, the reset inactivity timer prevent-
14 ing the selected neighbor from resetting its adjacency with the router before the router
15 sends the unicast Hello packet.

1 29. (Previously Presented) Apparatus for restoring an adjacency between a router and its
2 neighbor during reload of routing software on the router, the apparatus comprising:
3 an interface adapted for placement into a predetermined state that enables the
4 router to receive an incoming Hello packet from the neighbor over a computer network;
5 a processor;
6 a memory coupled to the processor,
7 a neighbor data structure stored in the memory, the neighbor data structure con-
8 taining information pertinent to the adjacency formed between the router and neighbor;
9 and
10 a unicast Hello packet created by the processor in response to receiving an incom-
11 ing Hello packet from the neighbor, the unicast Hello packet sent to the neighbor to
12 thereby prevent the neighbor from dropping the adjacency with the router.

1 30. (Previously Presented) The apparatus of Claim 29 further comprising:
2 the predetermined state is a Waiting state with an asserted Preempt flag.

1 31. (Previously Presented) The apparatus of Claim 30 further comprising:
2 the neighbor data structure is further configured to store the Preempt flag.

1 32. (Previously Presented) Apparatus for restoring an adjacency between a router and its
2 neighbor during reload of routing software on the router, the apparatus comprising:
3 an interface adapted for placement into a predetermined state that enables the
4 router to receive an incoming Hello packet from the neighbor over a computer network;
5 a processor;
6 an empty link state Update packet created by the processor and multicasted over
7 the network in response to placement of the interface into a Waiting state during the re-
8 load of routing software;
9 the empty link state Update packet received at a neighbor; and
10 an inactivity timer for the router at the neighbor, the inactivity timer reset in re-
11 sponse to receiving the empty link state Update packet to thereby prevent the neighbor
12 from resetting its adjacency with the router before the router sends the unicast Hello
13 packet.

1 33. (Previously Presented) A computer readable medium containing executable program
2 instructions for restoring adjacencies between a router and its neighbors during reload of
3 routing software on the router, the executable program instructions comprising program
4 instructions for:
5 determining if a neighbor data structure exists for each neighbor sending an in-
6 coming Hello packet;

7 if not, creating a neighbor data structure for each neighbor sending the incoming
8 Hello packet;
9 placing an interface of the router in a predetermined state that enables the router
10 to receive incoming Hello packets from its neighbors over a computer network;
11 creating a unicast Hello packet in response to receiving an incoming Hello packet
12 from each neighbor and in response to the created data structure and predetermined state;
13 and
14 sending the unicast Hello packet to each neighbor from whom it has received an
15 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
16 the router.

1 34. (Previously Presented) The computer readable medium of Claim 33 further compris-
2 ing:
3 indicating that the predetermined state is a Waiting state with an asserted Pre-
4 empt flag.

1 35. (Previously Presented) The computer readable medium of Claim 34 further compris-
2 ing:
3 providing program instructions for storing the Preempt flag within the neighbor
4 data structure.

1 36. (Previously Presented) A computer readable medium containing executable program
2 instructions for restoring adjacencies between a router and its neighbors during reload of
3 routing software on the router, the executable program instructions comprising program
4 instructions for:
5 placing an interface of the router in a predetermined state that enables the router
6 to receive incoming Hello packets from its neighbors over a computer network;
7 creating a unicast Hello packet in response to receiving an incoming Hello packet
8 from each neighbor; and

9 sending the unicast Hello packet to each neighbor from whom it has received an
10 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
11 the router;
12 in response to the step of placing, sending an empty link state Update packet from
13 the router over the interface to a selected neighbor;
14 receiving the empty link state Update packet at the selected neighbor; and
15 in response to the step of receiving, resetting an inactivity timer for the router at
16 selected neighbor to thereby prevent the selected neighbor from resetting its adjacency
17 with the router before the router sends the unicast Hello packet.

1 37. (Previously Presented) A method for maintaining adjacencies between a router and
2 its neighbors, the method comprising the steps of:

3 placing an interface of the router in a predetermined state that enables the router
4 to receive incoming Hello packets from its neighbors over a computer network;
5 creating an outgoing Hello packet by the interface and in response to receiving an
6 incoming Hello packet from each neighbor; and
7 sending the outgoing Hello packet to each neighbor from whom it has received an
8 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
9 the router.

1 38. (Previously Presented) The method of Claim 37 further comprising the steps of:

2 determining if a neighbor data structure exists for each neighbor from which an
3 incoming Hello packet was received; and
4 if not, creating a neighbor data structure for each neighbor from which an incom-
5 ing Hello packet was received.

1 39. (Previously Presented) The method of Claim 38 further comprising:

2 indicating that the predetermined state is a Waiting state with an asserted Pre-
3 empt flag.

1 40. (Previously Presented) The method of Claim 39 further comprising:
2 providing the Preempt flag within the neighbor data structure.

1 41. (Previously Presented) The method of Claim 37 further comprising the steps of:
2 in response to the step of placing, sending an empty link state Update packet from
3 the router over the interface to a selected neighbor;
4 receiving the empty link state Update packets at the selected neighbor; and
5 in response to the step of receiving, resetting an inactivity timer for the router at
6 the selected neighbor to thereby prevent the selected neighbor from resetting its adja-
7 cency with the router before the router sends the outgoing Hello packet.

1 42. (Previously Presented) Apparatus for maintaining an adjacency between a router and
2 its neighbor, the apparatus comprising:
3 means for placing an interface of the router in a predetermined state that enables
4 the router to receive incoming Hello packets from its neighbors over a computer network;
5 means for creating an outgoing Hello packet by the interface and in response to
6 receiving an incoming Hello packet; and
7 means for sending the outgoing Hello packet to each neighbor from whom it has
8 received an incoming Hello packet to thereby prevent the neighbor from dropping its ad-
9 jacency with the router.

1 43. (Previously Presented) The apparatus of Claim 42 further comprising:
2 means for determining if a neighbor data structure exists for each neighbor from
3 which an incoming Hello packet was received; and

4 means for creating a neighbor data structure for each neighbor from which the in-
5 coming Hello packet was received, if the neighbor data structure does not exist.

1 44. (Previously Presented) The apparatus of Claim 43 further comprising:

2 means for indicating that the predetermined state is a Waiting state with an as-
3 serted Preempt flag.

1 45. (Previously Presented) The apparatus of Claim 44 further comprising:

2 means for providing the Preempt flag within the neighbor data structure.

1 46. (Previously Presented) The apparatus of Claim 42 further comprising:

2 means for sending an empty link state Update packet from the router over the in-
3 terface to a selected neighbor; and

4 means for resetting an inactivity timer for the router at the selected neighbor in re-
5 sponse to receiving the empty link state Update packet, the reset inactivity timer prevent-
6 ing the selected neighbor from resetting its adjacency with the router before the router
7 sends the outgoing Hello packet.

1 47. (Previously Presented) Apparatus for maintaining an adjacency between a router and
2 its neighbor, the apparatus comprising:

3 an interface adapted for placement into a predetermined state that enables the
4 router to receive an incoming Hello packet from the neighbor over a computer network;
5 and

6 an outgoing Hello packet created by the interface and in response to receiving an
7 incoming Hello packet from the neighbor, the outgoing Hello packet sent to the neighbor
8 to thereby prevent the neighbor from dropping the adjacency with the router.

1 48. (Previously Presented) The apparatus of Claim 47 further comprising:
2 the predetermined state is a Waiting state with an asserted Preempt flag; and
3 a neighbor data structure stored in memory, the neighbor data structure containing
4 information pertinent to the adjacency formed between the router and neighbor, the
5 neighbor data structure further configured to store the Preempt flag.

1 49. (Previously Presented) The apparatus of Claim 47 further comprising:
2 an empty link state Update packet created in response to the placement of the in-
3 terface into the predetermined state and the empty link state Update packet multicasted
4 over the network;
5 the empty link state Update packet received at a neighbor; and
6 an inactivity timer for the router at the neighbor, the inactivity timer reset in re-
7 sponse to receiving the empty link state Update packet at the neighbor to thereby prevent
8 the neighbor from resetting its adjacency with the router before the router sends the out-
9 going Hello packet.

1 50. (Previously Presented) A computer readable medium containing executable program
2 instructions for maintaining adjacencies between a router and its neighbors, the executa-
3 ble program instructions comprising program instructions for:
4 placing an interface of the router in a predetermined state that enables the router
5 to receive incoming Hello packets from its neighbors over a computer network;
6 creating an outgoing Hello packet by the interface and in response to receiving an
7 incoming Hello packet from each neighbor; and
8 sending the outgoing Hello packet to each neighbor from whom it has received an
9 incoming Hello packet to thereby prevent the neighbor from dropping its adjacency with
10 the router.

1 Please add new claims 51 *at al.*

1 51. (New) A method for restoring adjacencies between a router and its neighbors during
2 reload of routing software on the router, the method comprising the steps of:

3 placing an interface of the router in a predetermined state that enables the router
4 to receive incoming Hello packets from its neighbors over a computer network;

5 creating a unicast Hello packet by the interface, the unicast Hello packet in re-
6 sponse to receiving an incoming Hello packet from a neighbor; and

7 sending the unicast Hello packet by the interface to each neighbor from whom it
8 has received an incoming Hello packet.

1 52. (New) The method of claim 51, further comprising:

2 using processing logic within the interface to create and send the unicast Hello
3 packet.

1 53. (New) The method of 51, further comprising:

2 receiving by each neighbor router the unicast Hello packet to thereby prevent the
3 neighbor from dropping its adjacency with the router.

1 54. (New) The method of claim 52, further comprising:

2 in response to the step of placing, sending empty link state Update packets from
3 the router over the interface;

4 receiving the empty link state Update packets at the neighbors; and

5 in response to the step of receiving, resetting an inactivity timer for the router at
6 each neighbor to thereby prevent the neighbor from resetting its adjacency with the router
7 before the neighbor router sends the unicast Hello packet.

1 55. (New) The method of claim 51, further comprising:

2 sending an empty link state Update packet to force the neighbor to reset an inac-
3 tivity timer for the router.

1 56. (New) An apparatus for restoring adjacencies between a router and its neighbors dur-
2 ing reload of routing software on the router, the apparatus comprising:

3 means for placing an interface of the router in a predetermined state that enables
4 the router to receive incoming Hello packets from its neighbors over a computer network;

5 means for creating a unicast Hello packet by the interface, the unicast Hello
6 packet in response to receiving an incoming Hello packet from each neighbor; and

7 means for sending the unicast Hello packet by the interface to each neighbor from
8 whom it has received an incoming Hello packet to thereby prevent the neighbor from
9 dropping its adjacency with the router.

1 57. (New) The apparatus of claim 56, further comprising:

2 means for using processing logic within the interface to create and send the uni-
3 cast Hello packet.

1 58. (New) The method of 56, further comprising:

2 receiving by each neighbor router the unicast Hello packet to thereby prevent the
3 neighbor from dropping its adjacency with the router.

1 59. (New) The apparatus of claim 58, further comprising:

2 in response to the step of placing, means for sending empty link state Update
3 packets from the router over the interface;

4 means for receiving the empty link state Update packets at the neighbors; and

5 in response to the step of receiving, means for resetting an inactivity timer for the
6 router at each neighbor to thereby prevent the neighbor from resetting its adjacency with
7 the router before the router sends the unicast Hello packet.

1 60. (New) The apparatus of claim 56, further comprising:
2 means for sending an empty link state Update packet to force the neighbor to reset
3 an inactivity timer for the router.

1 61. (New) An Apparatus for restoring an adjacency between a router and its neighbor
2 during reload of routing software on the router, the apparatus comprising:
3 an interface adapted for placement into a predetermined state that enables the
4 router to receive an incoming Hello packet from the neighbor over a computer network;
5 a processor coupled to the interface on a line card; and
6 a unicast Hello packet created by the processor in response to receiving an incom-
7 ing Hello packet from the neighbor, the unicast Hello packet sent to the neighbor.

1 62. (New) The apparatus of claim 61, further comprising:
2 an empty link state Update packet created by the processor and multicasted over
3 the network in response placement of the interface into a Waiting state with an asserted
4 Preempt flag; and
5 an inactivity timer for the router stored at the neighbor, the inactivity timer reset
6 in response to receiving the empty link state packet at the neighbor to thereby prevent the
7 neighbor from resetting its adjacency with the router before the router sends the unicast
8 Hello packet.

1 63. (New) A method for restoring adjacencies between a router and its neighbors during
2 reload of routing software on the router, the method comprising the steps of:
3 placing an interface of the router in a predetermined state that enables the router
4 to receive incoming Hello packets from its neighbors over a computer network;
5 creating a unicast Hello packet by the interface, the unicast Hello packet in re-
6 sponse to receiving an incoming Hello packet from a neighbor;

7 sending the unicast Hello packet by the interface to each neighbor from whom it has re-
8 ceived an incoming Hello packet; and
9 in response to a neighbor router receiving the Hello packet, preventing the
10 neighbor router from dropping its adjacency with the router.

1 64. (New) An apparatus for restoring adjacencies between a router and its neighbors dur-
2 ing reload of routing software on the router, the method comprising the steps of:
3 means for placing an interface of the router in a predetermined state that enables
4 the router to receive incoming Hello packets from its neighbors over a computer network;
5 means for creating a unicast Hello packet by the interface, the unicast Hello
6 packet in response to receiving an incoming Hello packet from a neighbor;
7 means for sending the unicast Hello packet by the interface to each neighbor from
8 whom it has received an incoming Hello packet; and
9 in response to a neighbor router receiving the Hello packet, means for preventing
10 the neighbor router from dropping its adjacency with the router.

1 65. (New) An Apparatus for restoring an adjacency between a router and its neighbor
2 during reload of routing software on the router, the apparatus comprising:
3 an interface adapted for placement into a predetermined state that enables the
4 router to receive an incoming Hello packet from the neighbor over a computer network;
5 a processor coupled to the interface on a line card; and
6 a unicast Hello packet created by the processor in response to receiving an incom-
7 ing Hello packet from the neighbor, the unicast Hello packet sent to a neighbor router;
8 the neighbor router, in response to the Hello packet, is prevented from dropping
9 the adjacency with the router.